

**To:** Potential Bidders, Solicitation No. DCEB-DMPED-08-R-Engineer Design Services  
**From:** Nina Albert, Project Manager, Office of the Deputy Mayor for Planning and Economic Development  
**Re:** Southwest Waterfront Fish Market and Washington Marina Bulkhead Conditions

---

This memo attempts to summarize studies investigating the physical conditions of the bulkhead and piers at the Fish Market and Washington Marina on the Southwest Waterfront in Washington DC. The original documents will be studied by the selected bidder for additional details.

The US Army Corps of Engineers, Baltimore District (ACOE) performed an investigation of the bulkhead in 2001, entitled "Inspection of Waterfront Facilities at the Southwest Waterfront Development Site Washington, DC" completed in April, 2001. In addition, in July 2006 the Anacostia Waterfront Corporation commissioned the marine engineering firm Moffat & Nichol (MN) to perform a complete structural investigation of the existing bulkhead.

### **Summary of Recommendations**

The ACOE report determined that the majority of the bulkhead at the Washington Marina was in good condition, with the exception of three locations which required immediate repair. It recommended repair of these locations and reinspection of the bulkhead every six years. The ACPE reported that although the wooden piles of both the West and East Fish Market Piers were in fairly good condition, the concrete and timber structures supporting the slabs were in poor condition and had lost much of their structural capacity. The ACOE recommended replacement of both Piers.

The Moffat & Nichol Report found that the sections of the bulkhead constructed with steel sheet piles and concrete caps were in good condition, but those with timber relieving platforms were in poor condition. The M&N report offered several short term repair solutions in areas of immediate concern, but did not endorse repair as a long term strategy, instead recommending complete replacement of the timber relieving platform sections with steel sheet pile wall systems.

### **2001 Army Corps Report: Bulkhead Structure**

The ACOE report estimated that the bulkhead at the Washington Marina was likely built in 1939, and that at the Fish Market could have been even earlier. The majority of the structure at this end of the waterfront is constructed from timber piles and concrete retaining walls, and the remainder is a concrete capped steel sheet pile bulkhead. The timber piles supporting the area of the bulkhead surrounding the Fish Market averaged a 1/2" pick penetration. This is a measurement used to test the strength of materials. The cap and desk components of the timber pile sections also exhibited a 1/2" average pick penetration. In general, the concrete capped steel sheet pile segment was in good condition. The ACOE found one section of sidewalk next to the bulkhead which was in poor condition at Station 0+94 at the west end of the Washington Marina, and one several cracks in the concrete retaining wall at Station 0+00, 8+42, and 8+65. The study recommended immediate repair of the sidewalk at Station 0+94, repair of the retaining wall at Station 0+00, and reinspection of the bulkhead every 6 years.

### **2001 Army Corps Report: Fish Market Piers**

The report indicted that the piers at the Fish Market "pre-date the Washington Marina facilities (constructed circa 1940) and may have been constructed as early as the 1910's. The west and east piers contain a 124 and 99 timber plumb support piles, respectively. These piles stand under a structure of transverse concrete arched girders supporting a reinforced concrete deck.

A pick test was performed on the piles and again the picks averaged ½” penetration. The report found “the timber piles supporting the piers [to be] in excellent condition.” The caps were “generally in good condition with localized areas in fair condition.” However, the study reports that the above water “arched girders show severe deterioration,” with up to a 50% loss of section. On the west pier “approximately 30% of the arch mid-spans exhibit exposed reinforcing steel, and 40% have significant cracking and spalling.” The east pier showed less signs of disrepair, but still posed significant problems with “20% of the arch mid-spans [exhibiting] exposed reinforcing steel and 30% [with] significant cracking and spalling.” The floor beams were in even worse condition, with 80% of the west pier and 25% of the east pier’s floor beams exhibiting spalling over 50% of the section. The concrete beams were in “fair to poor condition,” and the water side edge beams on both piers were found to be “severely deteriorated, with up to 100% loss of beam and 50% loss of bearing area.” The timber columns that support the floor beams were in poor condition, with 50% “missing, severely deteriorated, or non-bearing due to loss of shims.” The topside of the piers’ slab was found to have “serious deterioration of the steel reinforcement and severe spalling and is in poor condition,” with “many locations [having] 100% loss of section of the main longitudinal steel reinforcement below transverse construction joints.”

The report concluded that “both the West Fish Market Pier and the East Fish Market Pier are in poor condition,” and recommended total replacement of both piers. In addition, it recommended an immediate restriction of vehicle loading on both piers to 3 tons/vehicle, prohibition of all vehicles from parking on the 30 most southern feet of the east pier, and immediate replacement of a deteriorated timber deck extension on the west pier. The investigation estimated that were the piers not replaced, and a repair program was implemented instead, the “repairs to these elements may add ten years to the life of the piers,” meaning the piers would be unusable by 2011.

#### **2006 Moffat & Nichol Report: Bulkhead Structure**

The Moffat & Nichol Report investigated the entire length of the bulkhead from the Washington Marina to the Police Pier. This memo summarizes only those conditions from the Fish Market west.

M&N noted the two types of construction of the bulkhead, timber relieving and steel sheet piles with a concrete cap. According to the report, “replacement of the timber relieving platform is recommended for the long term use of the bulkhead,” as it was found to be in “fair to poor condition, and in most cases, near the end of its design life.” The piles supporting this section of the bulkhead “demonstrated a significant reduction in section and large deterioration in the connections to the cap.” In addition, “all connection steel hardware including bolts, nuts, etc. exhibit [up to] 50% section loss.” While the ACOE report also questioned the long term stability of the timber relieving portion of the bulkhead, it appears that in the five years between investigations, conditions worsened considerably. The average pick penetration in 2006 was ¾” for the timber piles and concrete caps, compared with the ½” average five years prior. The concrete structure was found to be in safe condition with the exception of one area at the wingwall near the Washington Marina, where the top portion of the wall has “rotated towards the water, which causes a concern for the stability of the wingwall and the possibility of further movement.”

M&N specified several short term repairs, including 1) patch of various holes in sheet pile section 2) address corrosion on steel sheeting, 3) anchor the concrete wingwall at the northeast end of Washington Marina, 4) replace section of concrete promenade sidewalk, and 5) address issues with electrical and other utility systems attached to the bulkhead face. M&N’s long term recommendation was to replace “all timber platform sections with a tied back sheet pile wall system.”

The Moffat & Nichol Study in June, 2006 did not address the Fish Market Piers.